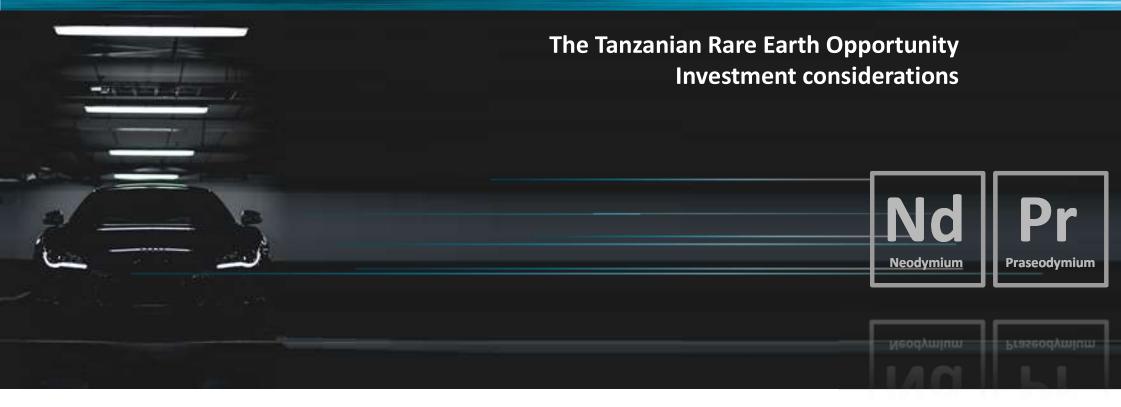


# Powering the green transformation



# **22 February 2021**

The International Mineral and Mining Investment Conference
Dar es Salam

#### Disclaimer



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#### **Compliance Statement**

Information relating to financial forecasts, production targets, infrastructure, project execution, cost estimating, metallurgical test work, exploration results, Mineral Resource estimates and Ore Reserve estimates is extracted from the report entitled "Lower price deck delivers similar BFS results for Ngualla" created on the 12th of October 2017 and is available to view on <a href="http://www.peakresources.com.au/asx-announcements/">http://www.peakresources.com.au/asx-announcements/</a>. The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

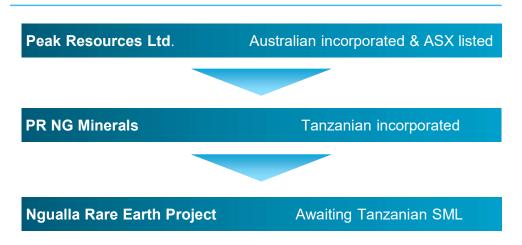
### PR NG Minerals... who we are



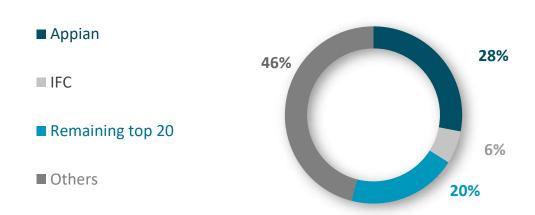
PR NG Minerals is a Tanzanian company that is owned by ASX-listed Peak Resources and focused on developing the world-class Ngualla Rare Earth Project



#### **Corporate Structure**



#### **Peak Resources Shareholder Summary**



#### **Ngualla Rare Earth Project**



One of the largest and highest grade undeveloped rare earth projects in the world

#### **Peak Resources Board and Management**

Abdullah Mwinyi*	
Jonathan Murray	
Bardin Davis	
Ismail Diwani*	

Philip Rundell

**Tony Pearson** 

Chair

**Non-Executive Director** 

Non-Executive Director

**Managing Director** 

**Country Manager Tanzania** 

Company Secretary & CFO

<sup>\*</sup> Tanzanian national

# Rare earth elements... what are they and why are they important?



### Unique set of properties that are highly strategic in a range of technological applications



#### **Rare Earths**

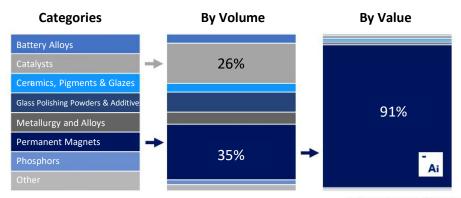
What are they?

What is the main use?

What's the key element for Ngualla?

- Neither "rare" nor "earths"
- A group of 17 specialty elements
- Permanent magnets are the dominating application with ~90% by value and ~35% by volume\*
- NdPr are the core value driver in the rare earth economy and represent 90% of Ngualla's future revenues

### **Applications by Value and Volume\***

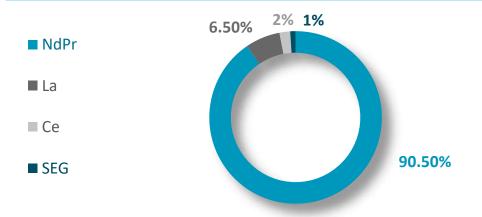


Source: Adamas Intelligence

#### **Main Rare Earth Applications**

Battery Alloys	La, Ce
Catalysts	La, Ce, Pr, Nd
Ceramics	La, Ce, Pr, Nd, Y, Eu, Gd, Lu, Dy
Glass Polishing	Ce, La, Pr, Nd, Gd, Er, Ho
Metal Alloys	La, Ce, Pr, Nd, Y
Magnets	Nd, Pr, Tb, Dy, Sm
Phosphors	Eu, Y, Tb, Nd, Er, Gd

### Ngualla Life Of Mine – Revenue Breakdown



<sup>\*</sup> Adamsintel report Q3-2020





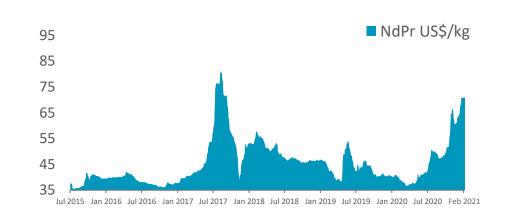
# NdPr... the key value driver



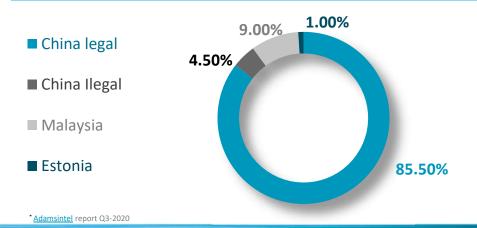
# NdPr is used in strong permanent magnets, which are critical to global decarbonisation technologies



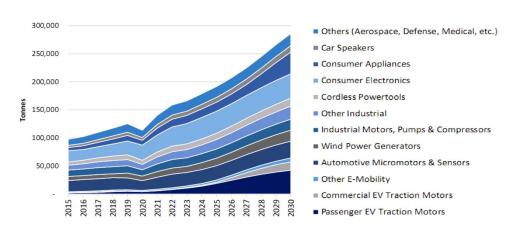
#### NdPr oxide prices... strong appreciation



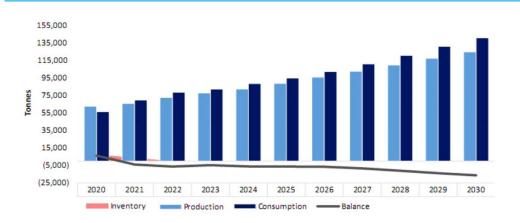
#### Global NdPr oxide production... dominance by China\*



#### NdFeB consumption... CAGR of 7.6% from 2020-2030\*



#### NdPr oxide market balance... emerging deficit\*

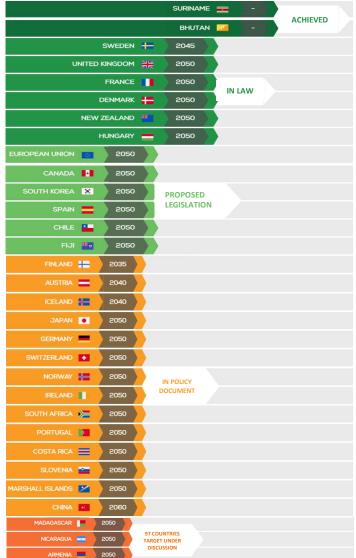




# NdPr outlook... driven by global green transformation



#### More countries committing to net zero targets...



#### ... and setting deadlines on banning petrol/ diesel vehicles .....



Fossil Free Street Declaration by 2030 Auckland, Barcelona, Cape Town, Copenhagen, London, Los Angeles, Mexico City, Milan, Oxford, Paris, Seattle & Vancouver

...and global leaders prioritising climate initiatives



"By polluting the oceans, not mitigating CO2 emissions and destroying our biodiversity, we are killing our planet. Let







that regularly takes the

recognise that climate

MD IMF

"Climate change presents critical challenges to our development efforts,

Emmanuel Macron,

President of France

**World Bank** President David Malpass





# Electrification of transport... EVs on the verge of mass production



# NdPr accounts for around ~30% of the weight of NdFeB permanent magnets used in EV motors



- Global EV sales growth 2020 YOY 43% reaching 3.24 million units EV Volumes
- Global EV market share of +40% by 2029 Roskill
- Between 2020-2030, NdFeB demand projected increase at 9.7% CAGR and prices at 9.9% CAGR Adamas
- NdPr oxide shortage of 16kt p.a. by 2030 Adamas
- Rare earth magnet applications will account for ~40% of total rare earth demand by 2030, up from 29% in 2020 Roskill

#### BEHIND EACH BATTERY IS A MOTOR

Over 90% of all new energy vehicles will be equipped with an **NdFeB** permanent magnet motor. **0.5-1kg per** is the incremental demand for **neodymium** (Nd) and **praseodymium** (Pr)
for each internal combustion vehicle (ICV) which gets replaced by an new energy electric vehicle (48v mild Hybrid, HEV, PHEV, BEV)



## Transition to renewable generation... direct drive wind turbines



## NdPr has a critical role to play in wind power generation



- Direct drive NdFeB permanent magnet wind turbines projected to increase market share from 22.5% today to 30.3% in 2030 Adamas Q3-2020
- Demand for NdPr oxide from NdFeB direct drive permanent magnet wind turbines will increase at a CAGR of
   9.3% until 2030 Adamas Q3-2020
- Global trend to install mega offshore wind turbines with a capacity +10 MW expected to further drive demand

# 1 Megawatt from 200kg NdPr Oxide

Each direct drive wind turbine uses a permanent magnet motor that generates between 2-6MWof performance. Each megawatt requires approx. 200kg pure NdPr Oxide.



# Ngualla... a world-class Tanzanian rare earth project



## Large high-grade Resource and Reserve bases supporting a low cost and the potential for a multi-generation project



Tanzania (~1,000km west of Dar es Salaam) Location:

United Kingdom (Tees Valley)

Weathered carbonatite with a high-grade bastnasite-Geology:

rich zone, low in acid consuming elements and

radionuclides

18.5Mt grading 4.80% REO for 887kt REO **Ore Reserves:** 

214.4Mt grading 2.15% REO for 4.61Mt REO **Ore Resources:** 

26 years (covering only Ore Reserves) Life of Mine:

Mining: Open Pit with low strip ratio of 1.77

**ROM Throughput:** 711ktpa dry ore

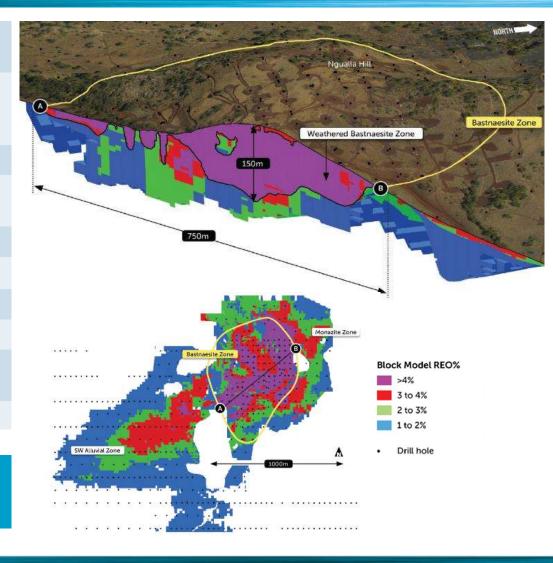
**Annual Production:** 9.3ktpa REO (2.8ktpa NdPr)

**Environmental** 

Received March 2017 Certificate:

**Mining Licence:** SML pending

Positioned to become a major source of NdPr for the global supply chain





# Ngualla... multi-commodity potential



## Subject to further exploration there is potential for Ngualla to become a multicommodity project



Potential to undertake further exploration once the Ngualla Rare Earth Project is operational

#### Commodities of interests... upside potential

#### Barite

- Occurs within same mineralisation zone as rare earth project
- Used as a weighting agent in petroleum well drilling mud

#### **Fluorspar**

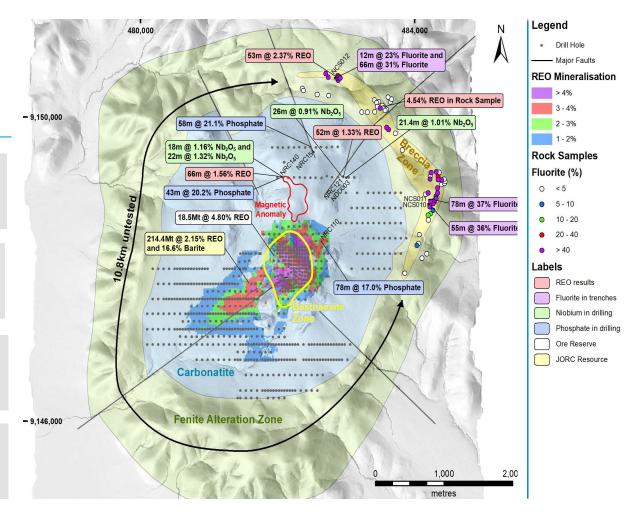
- Occurs in the North-East of deposit
- Used in chemical, metallurgical and ceramic processes

#### Niobium

- Occurs primarily in the Northern Zone
- Used in high strength steel alloys and in super conducting materials

#### Phosphate

- Occurs primarily in the Northern Zone
- Used in fertilisers



# Ngualla Project... direct and indirect job creation



Ngualla will generate significant benefits to Tanzanians and the Government through job creation, skill development and a range of taxes, levies and royalties





# **Current Employment**

- 98% of employees are Tanzanian Nationals
- Employment during active exploration reached 92
- Community programs and contributions generate further indirect employment

# **Employment During Construction**

- ~ 600 to be directly employed
- ~ 3,000 indirectly employed

# **Employment During Steady State Operation**

- 214 directly employed and 92% Tanzanian Nationals
- $\sim$  1,000 indirect employment opportunities





# **Ngualla Project... infrastructure development**



### The Ngualla Project will deliver infrastructure to the local community and broader region





# Eastern access road

- 80km road requiring capex of TSh59B (US\$26m)
- Southern access road is being investigated as an alternate route to site

# Permanent Accommodation

 To serve 215 plant and mine personnel consisting of accommodation units, canteen and kitchen, recreational centres and more

#### **Solar farm**

 Hybrid Solar: HFO Power Generation for the Project

#### **Water Supply**

 New water supply to the Ngwala Village using solar operated pumps





# Ngualla Project... committed to environmental, social and sustainability best practice



PR NG is committed to improving the communities in which it operates whilst maintaining best practice environmental management compliant with the IFC Guidelines/World Bank





- 2 new classrooms under construction in Itiziro
- 2 new classrooms and refurbishment of 5 existing classrooms in Ngwala
- Donation of new school desks, beds, mattresses, textbooks, stationary and equipment



Construction of 9 Teacher's Houses



- Water Bores in Madodomia and Itiziro
- Ngwala Clinic Waiting Area
- Sporting events
- Other community programs and donations



Tanzanian opportunity... utilizing endowments of rare earth and battery metals to generate national wealth, economic development and jobs



Leveraging the global green transformation to become the new Middle East for net-zero carbon materials and enhance geo-political positioning

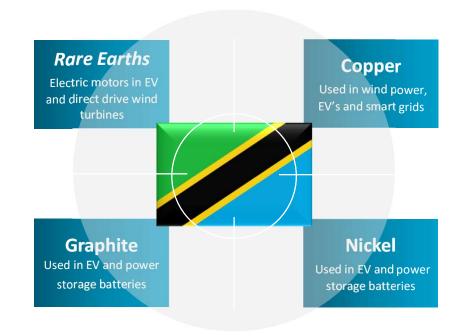


# Middle East 20<sup>th</sup> Century transformation on the back of fossil energy





# Tanzanian opportunity in rare earths and battery materials



## Window of opportunity... and global competitive timing pressure for capital



### The opportunity needs to be seized before competing projects capture the market window



#### Global rare earth projects are competing for capital...

#### **United States**

- Rare Element Resources
- Texas Mineral Resources
- **UCore Rare Metals**
- **US Rare Earth**

#### Australia

- Hastings Technology Metals
- Arafura Resources
- Northern Minerals
- Australian Strategic Materials

#### Greenland

**Greenland Minerals** 

#### Angola

Pensana

#### Malawi

Mkango Resources

#### Burundi

Rainbow

#### **Tanzania**

- PR NG / Peak Resources
- Vital Metals

#### ...and time is of the essence



"Naualla is a world-class project. However, timing is critical in capturing the market window"

Tony Pearson – Chairman, Peak Resources

#### International investment considerations

Commodity

Price projections, supply/demand dynamics, and competing projects

**Deposit** 

Mineralisation, grade, life of mine, reserves/resources, waste/ore ratio and exploration upside

Costs

Capex and opex, access to raw materials and positioning on the cost curve

Taxes & rovalties

Level and competitiveness with other jurisdictions

Infrastructure & utilities

Access to road, rail, ports and power





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